

Abstract

The invention concerns a membrane electrode unit (MEU) for electrochemical equipment, especially for membrane fuel cells. The membrane electrode unit has a "semi-coextensive" design and contains an ionically conductive membrane, two catalyst layers, and gas distributor substrates of different sizes on the front and back sides. The first gas distributor substrate has smaller surface dimensions than the ionically conductive membrane, while the second gas distributor substrate has the same area as the ionically conductive membrane. The membrane electrode unit has, because of its special design, a stable structure that can be handled well, and which exhibits advantages for sealing the reactive gases off from each other and in its electrical properties. In particular, the hydrogen penetration current is distinctly reduced. The membrane electrode unit is used in PEM fuel cells, direct methanol fuel cells, electrolyzers, and other electrochemical equipment.